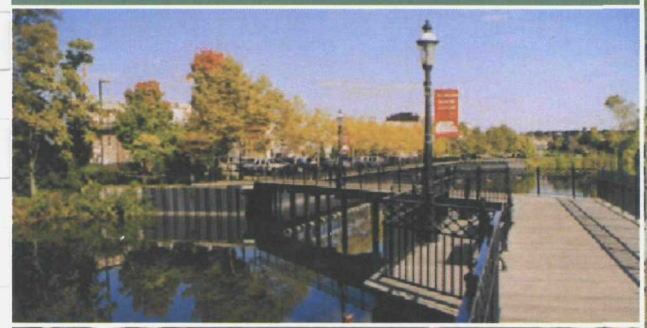
ARCADIS
Infrastructure, environment, buildings

Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site

Quality Management Plan

Kalamazoo and Allegan Counties, Michigan

May 2009



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Approved by:

Quality Management Plan

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ARCADIS

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Quality Management Plan

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site

Effective Date: May 2009
Rev. 0

1. Introduction

1.1 Purpose and Scope

This Quality Management Plan (QMP) describes the policies, organizational structure and responsibilities, procedures, and systems used by ARCADIS for the purpose of managing the quality of processes, products, and services provided at the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (Site) for the Site Client. This QMP applies to the full range of activities performed by ARCADIS, whose employees are committed to providing quality services (e.g., investigations, reports, letters, work plans, designs, specifications, data reports, other materials) to the Site Client.

ARCADIS project teams deliver quality by maintaining a solid client focus throughout the work. The key quality-related objectives for the Kalamazoo Site team are to:

- Consistently meet the intended use, purpose, or scope of all work assigned
- Comply with applicable regulatory requirements
- Conduct the work safely
- Achieve or exceed Site Client expectations
- Respect cost considerations

This QMP was developed in accordance with the Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs (American National Standards Institute and American Society for Quality Control [ANSI/ASQC] E4-1994) (hereinafter referred to as "ANSI/ASQC E4-1994"). The QMP is based upon the core principles of continuous improvement and is guided by the U.S. Environmental Protection Agency's (USEPA's) QA/R2 – Requirements for Quality Management Plans.

1.2 Internal Review and Approval

This QMP has been signed and approved by the ARCADIS Principal in Charge (PIC) and the ARCADIS Quality Assurance (QA) Manager for the Site program and project activities. Project Coordinators for specific Site efforts (e.g., work at the Site's operable units) are responsible for reviewing this plan and verifying that the quality procedures are followed such that efforts carried out for all aspects of Site work achieve the key quality-related objective listed above (section 1.1).

1.3 Control and Distribution

Revisions to this document will be controlled as follows:

a. The individuals listed on the approval page will approve all revisions prior to incorporation and distribution.

b. An effective date and revision number will be identified in the header of each page.

This QMP will be distributed to personnel working on Site projects (the team). Additionally, this QMP will be filed in ARCADIS' central project files in the Syracuse, New York and Brighton, Michigan offices.

This QMP will be submitted to the Client and USEPA for review and approval as required by applicable Consent Orders.

2. Management Systems

2.1 Management and Organization

2.1.1 Organization

The PIC has overall responsibility for maintaining quality for all Site projects and for how all employees conduct activities to meet the requirements of this QMP. The Project Coordinators (PCs) are responsible for managing quality for specific projects in coordination with the Task Managers who supervise the employees. The PIC also has the responsibility to verify that the quality of the team's products and services meets both their intended purpose and the Site Client's expectations. The success of the Quality System relies on the commitment of the PIC to provide the resources to effectively implement each project within the Site program.

2.1.2 *Responsibility and Authority*

a. The PIC has overall responsibility for the team's performance. The PIC will monitor project activities and has the authority to modify project decisions when they are inconsistent with the contract or Site Client requirements.

b. The PCs will have overall responsibility to define, plan, and control a project. The PCs will determine the project-specific objectives, scope of work, compensation, and profitability. The PCs will be responsible for controlling project performance.

c. The PCs will verify that the project teams are properly trained with regard to quality requirements for projects, and will participate in periodic reviews with the PIC, Task Managers, and key project personnel to discuss project developments and Site Client satisfaction.

d. Task Managers will be responsible for executing project tasks and assisting the PCs in defining, planning, and controlling projects.

e. The PCs will obtain appropriate resources to perform quality-related activities (e.g., assessment, verification, testing activities) related to this QMP.

f. The PIC will help verify that the project resources are available to achieve conformance to Site Client requirements.

g. The QA Manager will assist the PIC and PCs in development and implementation of Quality System activities to enable all personnel to adhere to the quality protocols for each project within the Site program.

h. The PCs and key technical support team members will review and approve all work plans; design documents; Standard Operating Procedures (SOPs); and project-related forms; as well as the current versions (and relevant updates/addenda) of the Multi-Area Quality Assurance Project Plan (Multi-Area QAPP), Multi-Area Health and Safety Plan (Multi-Area HSP); and Multi-Area Field Sampling Plan (Multi-Area FSP). Details of the responsibilities, authorities, and all functions that manage, perform, and verify work affecting quality will be defined and documented.

2.1.3 Assessment and Review

The PIC, together with the QA Manager, will assess and document the adequacy of the Quality System on an annual basis. Objectives of assessment and review will include:

a. An annual assessment of the QMP and the identification and implementation of changes and/or revisions to this QMP.

b. Verification that all those with responsibility or authority for the Quality System understand their roles and responsibilities and are performing them accordingly.

c. Verification that Quality System tools are available to all team personnel.

d. Verification that the Quality System has been implemented as defined by this QMP.

e. Verification that the provisions of the Multi-Area QAPP are being implemented.

f. Verification that the PCs are providing sufficient resources, coordination, and guidance to implement the Quality System at the project level.

g. Verification of the effectiveness of training and the implementation of elements within this QMP, which may be obtained from results of internal audits, project reviews, review of the Multi-Area QAPP, and management assessments, where applicable.

2.1.4 Reference

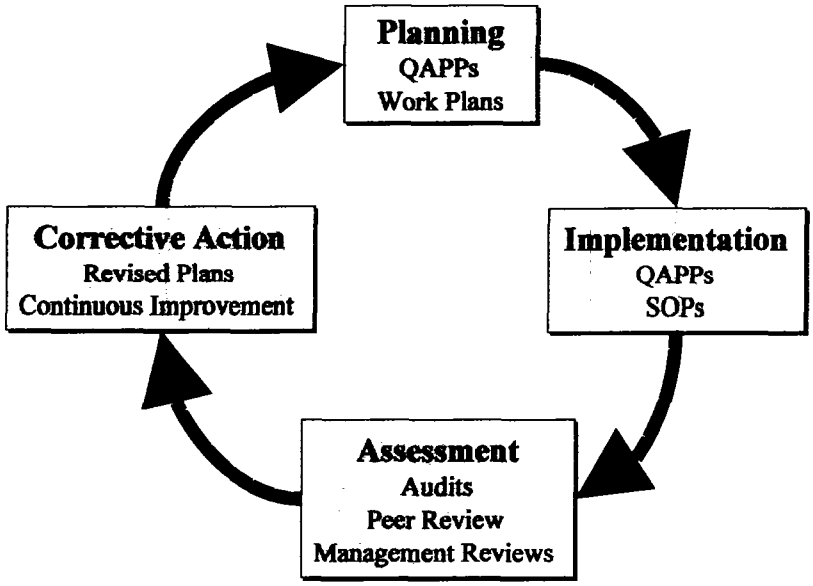
a. ANSI/ASQC E4-1994, Section 2.1, *Management and Organization.*

2.2 Quality System Components

2.2.1 Purpose

The ARCADIS Quality System is designed so that ARCADIS employees take steps to plan, execute, and assess the elements of our projects so that our clients are consistently provided with a product of known quality. The Quality System is intended to cover the organizational structure, the policies and procedures, responsibilities, authorities, resources, required documents/deliverables, and the guidance documents necessary for implementing the quality policy. The system is centered on elements of planning, implementation, assessment, and improvement. Figure 1 illustrates that the elements are an iterative process. The product delivery activities are supported by administrative functions such as procurement of items and services, documentation and record keeping, and use of computer hardware and software.

Figure 1 – Elements of the Quality System



2.2.2 Scope

The Quality System objectives of this QMP apply to all ARCADIS personnel working on Site projects and have been written in accordance with ANSI/ASQC E-4-1994 requirements.

2.2.3 Definitions

Quality System: A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for promoting improved quality in its work processes, products, and services. A Quality System provides a framework for planning, implementing, and assessing work performed by the organization and for carrying out required quality assurance/quality control (QA/QC).

2.2.4 Responsibilities

a. All project personnel are responsible for knowing and understanding the applicable QMP requirements for their work activities and any other supplemental project documentation.

b. The PIC, PCs, and QA Manager are responsible for maintaining this QMP.

c. The PIC is responsible for promoting compliance with this QMP.

d. The PCs are responsible for implementing and coordinating the Quality System on all project teams and verifying that team members know and understand the Quality System.

e. The PIC is responsible for verifying that: 1) resources are available for the effective implementation of the Quality System; 2) performance of work on Site projects conforms to this QMP; and 3) necessary assessments are conducted.

2.2.5 Procedures

The Quality System concept is shown on Figure 1 and explained throughout this QMP, which identifies the components at the policy, organization, and project levels and the interrelation between these components.

a. Work Plans, quality-related procedures, and addenda/updates to the Multi-Area QAPP will be prepared for individual projects, as necessary, to allow for implementation of the Quality System. These documents will be consistent with the policies expressed in this QMP and will be prepared in compliance with established written requirements (e.g., ANSI/ASQC E-4-1994).

b. The QMP includes requirements for the following Quality System components: quality system audits, quality system review, training, and project planning and implementation. The QA Manager or designee will provide training sessions on the elements of the quality system, as requested.

c. Periodically, the QA Manager, with the help of a designated team, will audit the QMP requirements for the projects and evaluate whether the project team is in conformance with the QMP requirements.

d. The PIC and QA Manager will conduct an annual review of the quality system to identify any gaps in the system and to determine if the system is effective. Recommendations for improvement will be considered and communicated to the project team(s).

e. The Multi-Area QAPP will be amended, as needed, for individual projects involving chemical data collection and analysis (such as those efforts carried out at the operable units of the Site). For other projects, QA/QC requirements will be assessed and addressed as appropriate during project planning activities such that appropriate QA/QC actions are conducted.

f. The Multi-Area FSP will be amended, as needed, and new or revised SOPs for field activities (included as part of the Multi-Area FSP) will be reviewed and approved by key technical resources within the company. SOPs will be accessible to all employees.

2.2.6 Documentation and Records

Quality System documentation at the project level is the responsibility of the PCs. All quality-related documentation will be retained and maintained within the central project files in the Syracuse, New York and Brighton, Michigan offices.

2.2.7 Reference

a. ANSI/ASQC E-4-1994, Section 2.1, *Management and Organization.*

2.3 Personnel Qualifications and Training

2.3.1 Purpose

The personnel qualifications and training objectives of this QMP are to ensure that all projects are staffed with personnel who are qualified and adequately trained, and that evidence of this training is documented and maintained.

2.3.2 Scope

The scope for identifying training and professional development needs includes all personnel and subcontractors providing items or performing services for any activities.

2.3.3 Responsibilities

a. The PCs will be responsible for verifying that assigned personnel in their discipline have the proper technical, health and safety, and other skills to perform the assigned task.

b. The PCs will be responsible for assessing personnel qualifications prior to project implementation and identifying specific training needs.

c. Documentation of health and safety and any required Occupational Safety and Health Administration (OSHA) training is maintained in an ARCADIS corporate database. The ARCADIS Human Resources department will maintain files on all personnel that contain relevant qualifications and/or training certificates. Project team members are responsible to provide the ARCADIS Human Resources department with copies of any certificates received for courses provided by an outside vendor.

d. Individual team members will maintain their own copies of training certificates.

2.3.4 Procedures

a. The PCs will continually monitor and identify additional training needs by evaluating the needs of the project verses project team member qualifications, experience, and performance.

b. The PCs are responsible for verifying that team members are complying with all applicable procedures. Qualified trainers (internal or external) shall be identified as

necessary for providing training based on subject expertise, experience, costs involved, or other factors as determined by the PIC and QA Manager.

c. Supervisors will perform annual performance evaluation reviews for each employee, and coordinate with the PCs as appropriate regarding training needs, employee expectations, project-specific performance, and goals. The effectiveness of training provided to employees may be verified in the following ways: project reviews, health and safety audits, loss prevention observations, performance evaluations, and on-site evaluations. Other methods may be developed and implemented as appropriate.

d. The PCs and Task Managers will attend appropriate management training required by ARCADIS and training specified by the PIC. This training will be documented accordingly.

2.3.5 Documentation and Records

Appropriate personnel training records will be maintained in the ARCADIS corporate database.

2.3.6 Reference

a. ANSI/ASQC E4-1994, Section 2.3, *Personnel Qualifications and Training.*

2.4 Procurement of Items and Services

2.4.1 Purpose

The objective of this procurement requirement is to verify that items and services procured are of the type and quality necessary for their intended use.

2.4.2 Scope

The scope includes all items and services purchased or procured for activities performed by project personnel, including work performed under project or overhead charges, in scientific or administrative areas, and in data gathering and data interpretation activities.

2.4.3 Definitions

Service: The result generated by activities at the interface between the supplier and the customer, and by supplier internal activities to meet customer needs. Such activities in environmental programs include planning, investigation, design, inspection, laboratory and/or field analysis, QA/QC reporting, design, construction, and maintenance.

Supplier: Any individual or organization furnishing items or services or performing work according to an agreement between two parties, such as a contract or financial assistance agreement. This is an all-inclusive term used in place of the following: vendor, seller, contractor, subcontractor, fabricator, or consultant.

Customer: A person or organization that requests products, data, or services.

2.4.4 Responsibilities

a. Appropriate project team personnel will be responsible for evaluating all items and services to be used in terms of the quality requirements of the work to be performed.

b. The PCs and Task Managers will be responsible for controlling purchase orders and timely incorporation of pertinent technical and quality requirements, including authorized changes.

c. The PCs and Task Managers will be responsible for, and will track, all items purchased for specific contracts.

2.4.5 Procedures

a. The project team will evaluate suppliers who provide goods and services for activities associated with a project to verify that the suppliers provide services or product(s) of the expected quality.

b. Personnel will use required corporate ARCADIS forms for purchase orders, contractor/supplier agreements, contracts, and other legal matters.

c. The PC or Task Manager requesting procurement of goods or services will complete purchase orders, work authorization forms, or other appropriate documentation correctly and with appropriate specifications.

d. Task Managers will document the adherence to quality standards by contractors/subcontractors on assigned tasks and will review activities with the PCs. This includes reviewing laboratory and other technical data provided by contractors/subcontractors.

e. The PCs will verify and approve any changes to purchase orders prior to purchasing material.

f. The PC, or the individual with appropriate authority, will sign off on all purchase orders prior to issuance.

g. The PCs will verify that contractors/subcontractors understand the requirements of ARCADIS to provide quality services to the Site Client and will obtain the Site Client's acceptance, when required, of the procurement prior to beginning work on a project.

h. All invoices issued by contractors/subcontractors will be reviewed thoroughly by the PCs to verify that the proper activities took place under the agreement negotiated for the project. All goods and services purchased are subject to approval by the PCs prior to payment.

2.4.6 Documentation and Records

Records of purchases, as well as executed subcontract agreements and certificates of insurance, are maintained in the central project files in the Syracuse, New York and Brighton, Michigan offices.

2.4.7 Reference

a. ANSI/ASQC E4-1994 Section 2.4, *Procurement of Items and Services.*

2.5 Documentation and Records

2.5.1 Purpose

The objective of the documentation and records portion of this QMP is to specify standards and procedures for the review, approval, distribution, security, retention, and retrieval of Quality System and project-related documents and records.

2.5.2 Scope

These procedures are applicable to all deliverables, including reports, work plans, drawings, records, proposals, and other documents.

2.5.3 Definitions

Document: Any written or pictorial information (e.g., reports, drawings) describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.

Record: A document that furnishes objective evidence of the items or activities and that has been verified and authenticated as technically complete and correct. Records may include photographs, drawings, figures, e-mails, electronic files, magnetic tape, and other data recording media.

Peer review: A documented critical review of work. Peer reviews are conducted by qualified individuals who are independent of those who performed the work, but are collectively equivalent in technical expertise to those who performed the original work. The peer review is conducted to evaluate the activities as technically adequate, competently performed, properly documented, and satisfying established technical and quality requirements.

2.5.4 Responsibilities

a. The PCs are responsible for verifying that all project-related documents and records are managed in accordance with ARCADIS corporate policy or contractual requirements.

b. The PCs are responsible for ensuring that the latest versions of SOPs and forms for activities related to the QMP and the project are available to the project team.

c. The PCs are responsible for reviewing and approving documents and verifying that the proper version of each document is used.

2.5.5 Procedures

a. Deliverables will be assigned a document number, title, date, primary contact (e.g., author, responsible person), and office location. Project-related information (i.e., contract number, work assignment, project number) will also be included on the document as applicable.

b. The PCs will have overall responsibility for the preparation of project-related documents and records.

c. The project reviewers and chain-of-custody protocol for documents will be established during the project planning process.

d. All documents prepared for the Client will be internally peer reviewed prior to submittal to the Site Client. The Client shall review and approve all documents prior to submittal to the regulatory agencies.

e. Any obsolete documents will be marked obsolete, removed from the point of use, and archived per corporate policy or Site Client policy. If obsolete documents will be used for legal or knowledge purposes, they will be identified as documents "for reference only."

f. All Site Client confidential information will be marked as such and stored in a secure location. If confidential information is needed on-site then it would be secured either in a locked cabinet file drawer in the project trailer or at the off-site local Project office. If not needed on-site it would be secured at the Brighton and/or Syracuse Kalamazoo files

g. Record retention times for project-related and other system documentation are based on contractual requirements, requirements specified in applicable Consent Orders, or ARCADIS' record retention policy.

2.5.6 Reference

a. ANSI/ASQC E4-1994, Section 2.5, *Documents and Records.*

2.6 *Computer Hardware and Software*

2.6.1 Purpose

The purpose of the computer hardware and software component of this QMP is to document the specifications for software/hardware installation, modification, and use.

2.6.2 Scope

This procedure is applicable to software/hardware used during this project for experimental design, design analysis, and modeling; operation or process control; environmental databases; and administrative support.

2.6.3 Definitions

Calibration: Comparison of a measurement standard, instrument, or item with a standard or instrument of higher accuracy to detect and quantify inaccuracies and to report or eliminate those inaccuracies by adjustments.

2.6.4 Responsibilities

a. All personnel are responsible for maintaining their computer equipment in a responsible manner.

b. The ARCADIS Corporate Information Technology (CIT) department will be responsible for the security and proper functioning of each office's local area network. CIT will also be responsible for establishing procedures for software installation and licensing agreements.

c. CIT will provide support regarding software and computer hardware purchases and updates.

d. Project team personnel will be responsible for maintaining instrumentation operated by computers and calibrating equipment per manufacturers' specifications.

2.6.5 Procedures

a. Procedures for installation, testing, use, maintenance, control, and documentation of computer software and hardware that meet the needs of the user will be provided by CIT.

b. Hardware and software will be controlled at the ARCADIS corporate level. If new versions of software or hardware are issued, CIT will be responsible for providing the latest hardware and software to each user.

c. CIT will be responsible for verifying the quality of hardware and software prior to its purchase.

d. Modeling or other specialized software will be approved prior to its use by the PIC or designate. The quality of the resulting model will be reviewed by a technical expert.

e. CIT will determine the best software technology and hardware available to the company. CIT personnel will evaluate new methodologies and technologies to be introduced into the systems. It will be the responsibility of CIT to propose the introduction of new applications and obtain approval for the changes at the ARCADIS corporate level before introducing new systems to project offices.

f. When needed, CIT representatives will make office visits to maintain systems and review standards in the project offices.

2.6.6 Documentation and Records

CIT will maintain records of each computer, including software capabilities and licensing agreements, and will maintain records corresponding to the procedures for installation, maintenance, and operation for computer software/hardware.

Documents stored on office servers are backed up on a regular basis (twice per day and at the end of a month) and back-up tapes are sent to a secure location monthly to ensure minimal loss of project data.

2.6.7 Reference

a. ANSI/ASQC E4-1994, Section 2.6, *Computer Hardware and Software*.

2.7 Planning

2.7.1 Purpose

The objective of the planning segment of this QMP is to document how individual operations are planned so that data or information collected is of the needed and expected quality for their intended use.

2.7.2 Scope

Planning activities are applicable to all project-related work, whether it is for internal or external clients.

2.7.3 Definitions

Work Plan: A formal document describing in comprehensive detail the activities to be performed to achieve project objectives.

Multi-Area QAPP: A document developed specifically for the Kalamazoo River Superfund Site describing in comprehensive detail the necessary QA/QC and other technical activities that must be implemented for the results of the work performed at the Site to satisfy relevant performance criteria.

2.7.4 Responsibilities

a. All personnel involved with planning activities of a project will be responsible for adhering to the planning requirements of this QMP and properly documenting project activities.

b. The PCs are responsible for verifying that procedures and resources are in place and that project planning activities are adequately documented.

c. The PCs are responsible for following ARCADIS corporate procedures for project planning and implementation.

d. The QA Manager will provide input to the PCs during planning activities and for reviewing updates/addenda to the Multi-Area QAPP, as requested.

2.7.5 Procedures

a. Project management procedures, described on the ARCADIS corporate intranet site, will be followed to promote effective project management.

b. Amendments/updates to the Multi-Area QAPP will be developed as necessary in accordance with appropriate guidance documents or standards (USEPA 2001a) and will be developed for activities that require systematic planning for environmental data collection.

c. Procedures for identifying technical and quality goals that meet the needs and expectations of the Site Client will be established per USEPA guidance for the data quality objective process (USEPA 2006) or other applicable guidance requirements.

d. Client satisfaction will be assessed through feedback from documented updates provided to the Site Client by the PCs, based on the determined project schedule. During these updates, the PCs will verify that Site Client objectives are being met. These updates will be further documented during project reviews with the PIC, PCs, and QA Manager as needed, to determine Site Client satisfaction. In addition, the ARCADIS Client Satisfaction Survey process will be used to determine overall Site Client satisfaction.

2.7.6 Documentation and Records

The PCs are responsible for maintaining records of planning activities.

2.7.7 References

a. ANSI/ASQC E4-1994, Section 2.7, *Planning*.

b. USEPA QA/R-5, Requirements for Quality Assurance Project Plans, March 2001a.

c. USEPA QA/G-4, Guidance for the Data Quality Objective Process, February 2006.

d. USEPA QA/R-2, Requirements for Quality Management Plans, March 2001b.

2.8 Implementation of Work Processes

2.8.1 Purpose

The purpose of the implementation of work processes segment of this QMP is to document how work will be executed so that work performed is of the quality required to meet Site Client needs.

2.8.2 Scope

This procedure applies to all activities performed internally and externally.

2.8.3 Definitions

SOP: A written document that details the method for an operation, analysis, or action with prescribed techniques and steps, and that is officially approved as the method for performing certain routine or repetitive tasks. Relevant Site-specific SOPs are included in the Multi-Area FSP.

2.8.4 Responsibilities

a. All personnel will be responsible for performing work according to documented and approved plans and procedures and for documenting any changes to plans or procedures (e.g., field notes, field logbooks).

b. The PCs are responsible for establishing and communicating suitable procedures for correctly performing planned work.

c. PCs are responsible for approving any changes to SOPs prior to implementing the new improvements.

d. Task Managers are responsible for training project staff on applicable SOPs as necessary and enabling efficient completion of project activities.

2.8.5 Procedures

a. The latest versions of generic SOPs are located in the ARCADIS SOP library on the corporate intranet and are intended to be used as templates for the development of project-specific SOPs, as needed. Project-specific SOPs are included in the Multi-Area FSP, and any revisions to such SOPs will be controlled by the PCs and communicated to project personnel upon change.

b. All SOPs will be reviewed and approved for use by the PC prior to implementation of the SOP.

c. The QA Manager or designated project-specific QA Manager may be asked to periodically perform assessments to verify that work processes are properly implemented according to the requirements stated within relevant SOPs.

2.8.6 Documentation and Records

The PCs will maintain records of all applicable project-specific procedures. The PCs will also provide the QA Manager with copies of written procedures for review prior to initial implementation of the SOP.

2.8.7 References

a. ANSI/ASQC E4-1994, Section 2.8, *Implementation of Work Processes*.

b. USEPA QA/G-6, Guidance for the Preparation of Standard Operating Procedures for Quality Related Operations, November 1995.

2.9 Assessment and Response

2.9.1 Purpose

The objective of the assessment and response portion of this QMP is to define a process for assessing activities to measure the effectiveness of the implemented Quality System.

2.9.2 Scope

The scope of this procedure includes all work performed by the team.

2.9.3 Definitions

Management self-assessment: The qualitative evaluation of a particular program operation and/or organizations(s) by those immediately responsible for overseeing and/or performing the work to establish whether the prevailing management structure, policies, practices, and procedures are adequate for ensuring that the type and quality of results needed are obtained.

Management independent assessment: The qualitative evaluation of a particular program operation by someone other than the group performing the work (either internal or external to the organization) to establish whether the prevailing management structure, policies, practices, and procedures are adequate for ensuring that the type and quality of results needed are obtained.

Nonconformance: A deficiency, discrepancy, or noncompliance in characteristics, documentation, or procedures that render the quality of an item or activity unacceptable or indeterminate.

Technical self-assessment: The evaluation process used by those immediately responsible for overseeing and/or performing the work to measure the performance or effectiveness of an operation or system and its elements with respect to documented specifications and objectives. Such assessments could be qualitative or quantitative evaluations.

Technical independent assessment: The evaluation process used by someone other than the group performing the work to measure the performance or effectiveness of a technical system and its elements with respect to documented specifications and objectives. Such assessments could be qualitative or quantitative evaluations.

Project progress review: Process for evaluating that the project team is providing the best service possible. A brief project summary developed for senior review of important project highlights.

Health and safety audit: Review of the health and safety processes conducted during field activities to ensure a safe working environment.

Loss prevention observations (LPOs): LPOs are conducted to improve health and safety activities and identify continuous improvement in safety performance on projects.

Corrective/preventive action: The response taken to eliminate or mitigate the causes of an existing nonconformance, deficiency, or unsatisfactory situation. Corrective/preventive actions are addressed through action items developed for individuals or groups and are covered in training all ARCADIS staff receive related to the Loss Prevention System. At the Kalamazoo River Superfund Site, specific response procedures are described in the Multi-Area HSP and associated amendments.

2.9.4 Responsibilities

a. The PIC, in cooperation with the QA Manager, will be responsible for providing regular assessment of the overall Quality System. The PIC will identify appropriate management independent assessments or technical independent assessments for the QA Manager (or designee) to perform during the course of Site project activities.

b. The PIC, PCs, and Task Managers will be responsible for conducting project progress reviews per the project management guidelines within the ARCADIS project management system, available on the corporate intranet site.

c. The PCs will be responsible for providing regular assessment of subcontractor work processes under their authority.

d. Project personnel will be responsible for conducting LPOs on a periodic basis and addressing root cause and completing corrective actions as necessary.

e. Project personnel will conduct health and safety audits on their projects and will relay the findings to their PC and/or the PIC, who will implement appropriate corrective actions, if any.

f. The QA Manager will be provided with the results of the internal assessment reviews and will follow up on corrective/preventive actions (if any) to improve the quality of the work.

2.9.5 Procedures

a. PCs will hold monthly progress reviews, which will include an assessment of how well Site Client objectives are being met; status of project plans, budgets, and schedules; status of change orders; status of quality and professional reviews; and status of accounts receivable.

b. PCs will perform routine assessments of project progress.

c. Project team members will discuss general observation of project progress as an assessment tool. Internal project status meetings will be documented by the project team and will be included in the project file.

d. Corrective actions will be determined for any deficiencies throughout the life of the project. All meetings, whether regarding project progress, Site Client updates, project reviews, or project planning, may encounter areas that require corrective action. The process for identifying and implementing corrective and preventive action within this QMP will be as follows:

    1. Document the deficiency, including a description of when the deficiency was first noticed and how it may have affected the project

2. Inform the PC of the deficiency

3. Identify and evaluate the root-cause

4. Develop and implement a corrective action

5. Identify preventive actions and how they will be implemented to reduce or prevent occurrence of the deficiency in the future.

e. The PCs will identify and forward areas for corrective action to the PIC and QA Manager. The QA Manager will review corrective action measures and will work with appropriate project team members to make recommendations for improvement to the PIC and/or PCs for approval.

2.9.6 Documentation and Records

a. All internal assessments will be documented and reported to the PIC.

b. The PCs are responsible for documenting regular project reviews.

c. PCs will review the project with their teams on a periodic basis prior to providing the information to the PIC during the regular review.

2.9.7 Reference

a. ANSI/ASQC E4-1994, Section 2.9, *Assessment and Response*.

2.10 Quality Improvement

2.10.1 Purpose

The purpose of the quality improvement component of this QMP is to establish a process that promotes continuous improvement of the Quality System.

2.10.2 Scope

Quality improvement encompasses all personnel in the performance of work processes and delivery of products or services for internal and external clients or customers.

2.10.3 Definitions

Quality improvement: A management program for improving the quality of operations and delivery systems. Such management programs generally entail a formal mechanism for encouraging worker recommendations with timely management evaluation and feedback or implementation.

2.10.4 Responsibilities

a. The PIC will be responsible for overall quality provided by the team and is the leader in the quality improvement process. Resources will be provided to ensure that improvements can be carried out.

b. All personnel will be responsible for participating in quality improvement by identifying process improvement opportunities, identifying problems, and offering solutions.

c. The PIC and PCs will be responsible for empowering team members and educating personnel on quality improvement practices.

d. The PCs will be responsible for conducting regular project progress reviews and reporting results to the PIC.

2.10.5 Procedures

a. The PCs will conduct regular project progress reviews.

b. A corrective and preventive action process will be initiated to improve the Quality System. This may include customer complaints, findings from internal assessments, project reviews, Site Client satisfaction survey feedback, and management reviews. The QA Manager will review any identified corrective actions and assist the project team in implementing such actions to help prevent reoccurrence.

c. All corrective and preventive actions will be documented and provided to USEPA as appropriate, or upon request.

2.10.6 Documentation and Records

The PCs will document and maintain records of the regular project progress reviews. These records will be placed into the central project files in Syracuse, New York and Brighton, Michigan. The PIC will receive a copy of regular project progress reviews, as requested.

2.10.7 Reference

a. ANSI/ASQC E4-1994, Section 2.10, *Quality Improvement.*

3. References

ANSI/ASQC. 1994. Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs. ANSI/ASQC E4-1994.

USEPA. 1995. Guidance for the Preparation of Standard Operating Procedures for Quality Related Operations, USEPA QA/G-6, November 1995.

USEPA 2001a. Requirements for Quality Assurance Project Plans. USEPA QA/R-5. EPA/240/B/B-01/003. March 2001.

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USEPA. 2006. Guidance for the Data Quality Objective Process. USEPA QA/G-4. February 2006.